

OR

- 6 a. Derive the expression for Figure Of Merit (FOM) for DSBSC receiver. (10 Marks)
 b. Explain the use of pre-emphasis and de-emphasis circuit in an FM system. (06 Marks)
 c. Define the white noise. Briefly explain the power spectral density and autocorrelation function of white noise. (04 Marks)

Module-4

- 7 a. State sampling theorem. Write the mathematical form of sampled signal and explain the steps to reconstruct the signal $g(t)$ from the sequence of sample value. (10 Marks)
 b. Explain the concept of TDM with a neat block diagram. (06 Marks)
 c. What is aperture effect? Briefly explain how to overcome this effect. (04 Marks)

OR

- 8 a. Briefly explain the following pulse modulation with waveform:
 i) PAM ii) PWM iii) PPM. (09 Marks)
 b. With neat block diagram, explain the generation of PPM wave. (05 Marks)
 c. Explain the following terms:
 i) Under sampling
 ii) Over sampling
 iii) Nyquist rate. (06 Marks)

Module-5

- 9 a. Derive the expression of output signal to noise ratio of a uniform quantizer. (08 Marks)
 b. With neat block diagram, explain the transmitter, transmission path and receiver of a PCM system. (08 Marks)
 c. An audio signal digitalized using PCM. Assume the audio signal bandwidth to be 20kHz.
 i) What is the Nyquist rate and Nyquist period of the audio signal?
 ii) If the samples are quantized to $L = 4096$ levels and then binary coded, determine the number of bits required to encode a sample. (04 Marks)

OR

- 10 a. Draw the line codes for given binary representation 01101001
 i) Unipolar NRZ signaling
 ii) Polar NRZ signaling
 iii) Unipolar RZ signaling
 iv) Bipolar RZ signaling
 v) Manchester code. (10 Marks)
 b. Explain granular noise and slope overload distortion in delta modulation. (04 Marks)
 c. With neat diagram explain delta modulation system. (06 Marks)
